

REMARKS

The indication of allowability of claim 6 is noted with appreciation.

The claims have been amended as suggested by the examiner in response to the indefiniteness rejection and are submitted to now fully comply with 35 USC 112, second paragraph. Applicants request entry of this amendment, even if the examiner maintains the prior art rejection, in order to place the application in better condition for appeal.

The invention, as claimed in independent claim 1 and independent claim 16, is directed to a multidose inhaler that includes an electrical circuit and electronic display that displays an indication of usage of the inhaler (e.g., doses used or doses remaining). The multidose inhaler includes a rotatable dosing unit and a rotatable member that is connected to the rotatable unit and has a cam that physically contacts a contact element of a switch and moves it from one position to another as the rotatable dosing unit is moved to supply a dose to an inhalation channel of the inhaler. The direct physical contact of the cam with the electrical contact provides a simple and very reliable switch activation. Claim 16 also recites that the inhaler includes a housing and that an inhalation channel member, the rotatable dosing unit, the rotatable member with the cam, and the electrical circuit are all within the housing, that the electronic display is in an opening in the housing, and that a contact element of the switch is in the path of travel of the cam so as to be displaced between a first open position and a second closed position when a dose of medicament is provided to the inhalation channel.

Claims 1 and 16 stand rejected under 35 USC 103(a) on the basis of Ambrosia, though Wolf is also relied upon in the rejection. Ambrosia is cited for disclosure of an inhaler with a "rotatable dosing unit (22)," a "dose counting unit (580), comprised of a display (330), which is aligned in an opening of the housing which displays usage of the inhaler and which may be outfitted with an electrical circuit (col. 25, lines 23-29)". It is asserted that Ambrosia has a "cam ... having a camming surface (the surfaces of the various gear teeth 602/604/606) ... where the cam will be in physical contact with a contact element ... or where the contact element is locatable within the path of travel of the cam." The examiner admits that Ambrosia does not

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disclose a display that is electronic and connected to the counting circuit. Wolf is relied upon for disclosure of the electronic display.

While Ambrosia says that “[m]any types of mechanical and digital counters are useful,” he says: “Presently preferred is counter mechanism 580, a decrementing mechanical counter” and then goes on to recite its mechanical components 224, 232, 330, 590, 620, 640. With respect to the electronic counter, Ambrosia merely states that it can be disposed in the base or other areas and has contacts that complete a circuit at some point in a dose loading operation.

The combination of references, however, fails to disclose or suggest the switch activation that is required by claims 1 and 16. Claim 1 recites a cam that is in physical contact with the contact element and causes movement of the contact element as a dose is delivered. Claim 16 recites that the contact element is located within the path of travel of the cam so as to be displaced between a first open position and a second closed position (i.e., open to closed or closed to open) when a dose of medicament is provided to the inhalation channel. As noted above the direct physical contact of the cam with the electrical contact provides a simple and very reliable switch activation.

In the rejection, gear teeth 602/604/606 were said to be a “cam.” These gear teeth are on the inside of the ring 590 of the mechanical counter. Ambrosia describes these gear teeth as being in physical contact with a rotation prevention spring detent 224. (col. 26, lines 3-7). There is absolutely no support for the statement in the office action that the “cam is in physical contact with a contact element” or that the “contact element is locatable within the path of travel of the cam.” The spring detent 224 merely prevents rotation. It is not an electrical contact, and is not even operably connected to the “display,” which the office action says is transparent plastic window 330.” (col. 25, lines 35-36).

Wolf does not make up the deficiencies of Ambrosia. Wolf describes a device that is mounted on a conventional inhaler. The device includes a sheath 120 and an electronic housing 110 that connect to the inhaler. The sheath includes magnets 122 which rotate with the sheath when a dose is being supplied. The electronic housing includes “activation sensing elements 435 and 436” (e.g., reed switches) that open or close as the “magnet 122 (embedded in the wall of activation sheath 120 of Fig. 1) comes within the proximity of the magnetic field.” (col. 6, lines 9-19).

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Thus the combination of references nowhere discloses or suggests a cam on a rotatable member that rotates with the dosing unit to "physically contact" and "move" an electrical contact or "displace" a contact "within the path of travel of the cam," as required by independent claims 1 and 16. Accordingly, independent claims 1 and 16 are patentable under 35 USC 103(a).

The remaining claims depend on independent claims 1 and 16 and are allowable for at least the reasons already mentioned.

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Applicant asks that all claims be allowed. Enclosed is a \$110 check for the Petition for Extension of Time fee. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

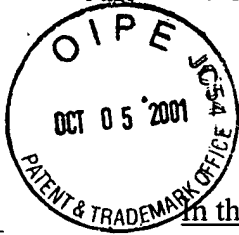
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Version with markings to show changes made

In the claims:

Claims 1, 6 and 16 have been amended as follows:

1. (Twice Amended) An inhaler for administering medicament by inhalation, comprising:  
an inhalation channel;  
a rotatable dosing unit which includes at least one dosing element for providing a dose of medicament to the inhalation channel; and

a dose counting unit which comprises an electronic display that displays usage of said inhaler, an electrical circuit for counting each dose of medicament provided to the inhalation channel and driving the display so as to provide an indication as to said usage of the inhaler, the electrical circuit including at least one switch which comprises a contact element that is movable between a first open position and a second closed position when a dose of medicament is provided to the inhalation channel, and a rotatable member connected to the dosing unit so as to be rotatable therewith, the rotatable member including at least one cam surface which includes at least one cam, each cam on each cam surface being configured, on rotation of the dosing unit to provide a dose of medicament to the inhalation channel, to be in physical contact with said contact element and cause movement of the contact element of [the respective] said at least one switch [from one said position to another said position] between said first open position and said second closed position.

6. (Twice Amended) An inhaler for administering medicament by inhalation, comprising:  
an inhalation channel;  
a rotatable dosing unit which includes at least one dosing element for providing a dose of medicament to the inhalation channel; and

a dose counting unit which comprises an electronic display that displays usage of said inhaler, an electrical circuit for counting each dose of medicament provided to the inhalation channel and driving the display so as to provide an indication as to said usage of the inhaler, the

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electrical circuit including at least one switch which comprises a contact element that is movable between a first open position and a second closed position when a dose of medicament is provided to the inhalation channel, and a rotatable member connected to the dosing unit so as to be rotatable therewith, the rotatable member including at least one cam surface which includes at least one cam, each cam on each cam surface being configured, on rotation of the dosing unit to provide a dose of medicament to the inhalation channel, to cause movement of the contact element of the respective at least one switch [from one said position to another said position] between said first open position and said second closed position,

wherein the electrical circuit includes a first switch which comprises a first contact element and a second switch which comprises a second contact element and the rotatable member includes first and second cam surfaces which each include at least one cam which is configured to cause movement of a respective one of the first and second contact elements from one said position to another said position,

wherein the corresponding cams on the first and second cam surfaces are rotationally offset in relation to one another such that one of the first and second switches is one of opened or closed before the other,

wherein the cams on the first and second cam surfaces are rotationally offset such that, on rotation of the rotatable member, in a first phase of rotation one of the first and second switches is closed and the other of the first and second switches is open, in a second phase of rotation the first and second switches are closed, in a third phase of rotation the one of the first and second switches is open and the other of the first and second switches is closed, and in a fourth phase of rotation the first and second switches are open, and the electrical circuit is configured to count only when this sequence of closing and opening the first and second switches is followed.

16. (Amended) An inhaler for administering medicament by inhalation, comprising:  
a housing member extending along a [vertical] longitudinal axis, said housing member having an opening;

an inhalation channel member within said housing member extending substantially parallel to said [vertical] longitudinal axis, said inhalation channel member having an inlet, a middle portion, and an outlet portion;

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a rotatable dosing unit within said housing which includes at least one dosing element for providing a dose of medicament to said inlet of said inhalation channel member; and

a dose counting unit including a rotatable member connected to the dosing unit so as to be rotatable therewith, said rotatable member having a cam and being located adjacent to said middle portion within said housing, said dose counting unit also including an electronic circuit that includes a switch with a contact element located within the path of travel of said cam so as to be displaced between a first open position and a second closed position when a dose of medicament is provided to the inhalation channel, said circuit counting doses provided to said inhalation channel, said dose counting unit including an electronic display that is aligned with said opening in said housing, is connected to said electrical circuit and displays an indication of doses supplied to said inhalation channel of said inhaler.

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